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NO. 464 P. 7

In re Patent Application of
KHOURI ET AL.
Serial No. 10/748,696
Filed: DECEMBER 30, 2003

REMARKS

Applicants appreciate the Examiner's careful and thorough examination of the present application. By this amendment, independent Claims 13 and 27 have been amended to more clearly define the subject matter of the present invention, and various claims have been cancelled or amended for consistency with these amendments. Claims 13, 17-19 and 27-29 remain pending in the application. Favorable reconsideration is respectfully requested.

I. The Invention

As shown in FIGS. 1-6, for example, the invention is directed to a non volatile memory including a circuit for sector remapping having a CAM (Content Addressable Memory) unit, associated to and in data communication with a multiplexer unit. The CAM unit detects that a sector is defective, it provides the pre-programmed address of a replacing sector and it activates the multiplexer which performs the replacement. The defective sectors and the corresponding locations of the address map may therefore be advantageously positioned to the rear to the addressing area which is consequently continuous, thus allowing the information to be easily stored and retrieved.

II. The Claims are Patentable

Claims 13-34 were rejected in view of Gray (U.S. Patent No. 6,484,271) for the reasons set forth on pages 3 and 4 of the Office Action. Applicants contend that Claims 13, 17-

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19 and 27-29 clearly define over the cited reference, and in view of the following remarks, favorable reconsideration of the rejection under 35 U.S.C. §102 is requested.

Independent Claim 13, as amended, is directed to a non-volatile memory device having a memory cell matrix including a plurality of sectors, and a remapping circuit for remapping defective sectors of the memory cell matrix, defective sectors comprising sectors having at least one defective cell. The remapping circuit comprises a content addressable memory (CAM) unit for detecting defective sectors of the memory cell matrix and includes first memory elements containing defective sector addresses, and corresponding second memory elements containing replacement sector addresses. A multiplexer unit is connected downstream from and in data communication with said CAM unit, and associated to and in data communication with the memory cell matrix. The CAM unit activates the multiplexer unit to replace defective sector addresses with replacement sector addresses when defective sectors of the memory cell matrix are detected.

Similarly, independent method Claim 27 includes detecting defective sectors of the device memory cell matrix with a content addressable memory (CAM) unit, the defective sectors comprising sectors having at least one defective memory cell, storing an address of the defective sector in first memory elements of the CAM unit, and providing a pre-programmed replacement sector address in second memory elements of the CAM unit. The replacement sector address correspond to a replacement sector to replace the defective

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sector with the replacement sector among the plurality of sectors of the memory cell matrix. The CAM unit activating a multiplexer unit in data communication with the memory cell matrix to replace defective sector addresses with replacement sector addresses when defective sectors of the memory cell matrix are detected.

It is these combinations of features which are not fairly taught or suggested in the cited reference and which patentably define over the cited reference.

The Examiner has relied on the Gray patent as disclosing a non-volatile memory device including a remapping circuit, a CAM unit and a multiplexer. More specifically, the Gray patent relates to a redundant memory system which includes an address bus, a random access memory, a content addressable memory, a replacement memory and a data bus. The random access memory includes a number of addressable memory locations each accessed by a different one of a number of addresses provided by the address bus. The content addressable memory stores a number of defective location addresses each corresponding to a defective addressable memory location of the random access memory and responds to a match between an address provided by the address bus and one of the defective location addresses to activate one of a number of match lines. The replacement memory is coupled to the content addressable memory by the match lines and includes a number of replacement memory locations each accessed by activating a different one of the lines.

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Although the Gray reference discloses the use of a CAM to address defective memory locations, there is no teaching of the CAM unit 80 detecting that a sector is defective, providing the pre-programmed address of a replacing sector and activating a multiplexer which performs the replacement. Indeed, the Examiner has relied upon switch 190 (FIG. 4 of Gray) as allegedly meeting the claim feature of a mulitplexer. However, such switch 190 is not activated by the CAM unit 80 to replace defective sector addresses with replacement sector addresses when defective sectors of the memory cell matrix are detected. Thus, the CAM unit and switch of Gray cannot meet the features as set forth in Claims 13 and 27.

As the Examiner is aware, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.

There is simply no teaching or suggestion in the cited reference to provide the combination of features as claimed. Accordingly, for at least the reasons given above, Applicants maintain that the cited reference does not disclose or fairly suggest the invention as set forth in Claims 13 and 27. Furthermore, no proper modification of the teachings of this reference could result in the invention as claimed. Thus, the rejection under 35 U.S.C. §102 should be withdrawn.

It is submitted that the independent claims are patentable over the prior art. In view of the patentability

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of the independent claims, it is submitted that their dependent claims, which recite yet further distinguishing features are also patentable over the cited references for at least the reasons set forth above. Accordingly, these dependent claims require no further discussion herein.

III. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the present application is in condition for allowance. An early notice thereof is earnestly solicited. If, after reviewing this Response, there are any remaining informalities which need to be resolved before the application can be passed to issue, the Examiner is invited and respectfully requested to contact the undersigned by telephone in order to resolve such informalities.

Respectfully submitted,

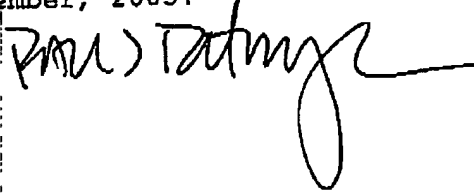


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